

RECEIVED
CENTRAL FAX CENTER
DEC 21 2006

U.S. Patent Application No. 10/780,309

Docket No.: V9661.0054

Reply to Office Action of September 27, 2006

AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph on page 4, line 11 to line 18 as follows:

The coating member can be made of various materials and in various forms. In one exemplary embodiment, the coating member can comprise a tin dioxide. In an exemplary embodiment, the coating member can comprise an antimony modified tin dioxide film. For example, the coating member can comprise ~~$\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$~~ $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ and SbCl_3 . In another exemplary embodiment, the coating member can comprise a predetermined amount of nickel. In one exemplary embodiment, the coating member can be in the form of a solution, before being affixed onto the substrate member. It will be appreciated that other materials and forms of the coating member are also within the scope of the present invention.

Please amend the paragraph on page 5, line 15 to line 22 as follows:

The substrate member can be affixed with the coating member in various manners. For example, the substrate member can be sprayed with, dipped into, or otherwise coated with the coating member. In an exemplary embodiment, the coating member can be sprayed with solution of 2.5 g ~~$\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$~~ $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ and 0.025g SbCl_3 in 25 ml of ethanol-HCl mixture. In an exemplary embodiment, the coating member can be dipped into 25 ml ethanol-HCl mixture solution of 2.75 g ~~$\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$~~ $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ and 0.025g SbCl_3 . It will be appreciated that other methods of affixing the coating member to the substrate member are also within the scope of the present invention.

U.S. Patent Application No. 10/780,309
Reply to Office Action of September 27, 2006

Docket No.: V9661.0054

Please amend the paragraph on page 6, lines 9 to 17 as follows:

Various systems can be used to generate a high concentration ozone material. In one exemplary embodiment of the present invention, an ozone generation system can be in the form of an electrochemical system for generating the high concentration ozone material. In an exemplary embodiment, the electrochemical system can comprise a cell member for containing an electrolyte material of various forms. For example, the electrolyte material can comprise $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ and SbCl_3 in an ethanol-HCl mixture. In another exemplary embodiment, ozone can be generated in pure water, without the need of dissolved ions. It will be appreciated that various other types of ozone generation systems are also within the scope of the present invention.

Please amend the paragraph following Example 1 on page 6, line 31 to page 7, line 8 as follows:

Example 1

A $0.8 \times 0.8 \times 0.05 \text{ cm}^3$ titanium (Ti) sheet member spot-welded with a 1 mm dia. titanium wire was first etch cleaned in a 10% boiled oxalic acid solution for 1 hour, then rinsed with distilled water and dried. An antimony doped SnO_2 electrode member was prepared by a spray pyrolysis technique on the pretreated Ti substrate member. The spray solution was 2.5 g $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ and 0.025g SbCl_3 in 25 ml of ethanol-HCl mixture. After drying the sprayed substrate member at 100°C for 10 min, the substrate member was calcined at 520°C in air for about 5 min. This treatment was repeated 12 times. The resulting electrode member showed a compact smooth surface morphology with connected particles having a diameter of about 3 to 5 nm (see Fig. 1). The atomic ratio of Sn to Sb in the film is about 7:1 by ICP analysis.

U.S. Patent Application No. 10/780,309
Reply to Office Action of September 27, 2006

Docket No.: V9661.0054

Please amend the paragraph following Example 2 on page 7, line 19 to line 26 as follows:

Example 2

An antimony doped SnO_2 electrode was prepared by dipping a Ti substrate with the same area as described in Example 1 into 25 ml ethanol-HCl mixture solution of 2.75 g ~~$\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$~~ $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ and 0.025g SbCl_3 . Before drying the dipped the Ti substrate at 100°C , excess solution on the substrate surface was removed to leave a thin uniform liquid layer on the substrate surface. The substrate member was calcined at about 520°C . The time periods for drying and calcining were the same as in Example 1. The above process was repeated 30 times. The surface morphology of the resulting electrode was similar to that shown in Fig. 1. The ratio of Sn to Sb in the film is about 10:1 by ICP analysis.

Please amend the paragraph following Example 3, on page 8, line 2 to line 9 as follows:

Example 3

A solution of 1 molar ~~$\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$~~ , 0.016 $\text{SnCl}_4 \cdot 5\text{H}_2\text{O}$ molar SbCl_3 , and 0.002 molar $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ in absolute ethanol was used as the coating solution. A titanium sheet can be coated in the same manner by dip coating and pyrolysis, as described in Example 1. The coating and pyrolysis was repeated 7 times. The resulting Ni-Sb doped SnO_2 coated electrode member was tested to give better ozone generation. The current efficiency can reached more than 25% at room temperature using 0.1 molar perchloric acid electrolyte and with applied electric potential of 2.2 V (vs. the Ag/AgCl member). The ozone generation and measurement was the same as described in Example 1.